

## ABSTRACT

1 An invert emulsion drilling fluid includes an oleaginous continuous phase; a non-  
2 oleaginous discontinuous phase; a biodegradable surfactant including a di-fatty acid ester  
3 of triglycerol; and a weighting agent. It is preferred that the fatty acid have the formula  
4  $\text{RCO}_2\text{H}$  in which R is an alkyl or akenyl having 10 to 20 carbon atoms. The oleaginous  
5 fluid is selected from diesel oil, mineral oil, synthetic oil, ester oils, glycerides of fatty  
6 acids, aliphatic esters, aliphatic ethers, aliphatic acetals, or other such hydrocarbons and  
7 combinations of these and similar compounds. The non-oleaginous phase is selected from  
8 fresh water, sea water, brine, aqueous solutions containing water soluble organic salts,  
9 water soluble alcohols or water soluble glycols or combinations of these and similar  
10 compounds. The weighting agent is any suitable weighting agent and is preferably  
11 selected from water insoluble weighting agents such as barite, calcite, mullite, gallena,  
12 manganese oxides, iron oxides, or combinations of these or water soluble weighting  
13 agents such as water soluble salts of zinc, iron, barium, calcium or combinations of these  
14 and similar compounds.  
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